

CLAIM AMENDMENTS

1. (Currently Amended) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising:

means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power supplied to the electrical circuit; and,

an AC period zero cross detector and a triac in the electrical circuit and wherein the control signal is a delayed triac trigger pulse for controlling power supplied to the electrical circuit.

2. (Original) The switch of claim 1 wherein the detecting means is a capacitive sensor.

3. (Cancelled)

4. (Original) The switch of claim 1 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

5. (Original) The switch of claim 1 further comprising an A/D converter to convert the output signal from the detecting means to a digital value.

6. (Original) The switch of claim 1 further comprising a differentiator for receiving the output signal and for transmitting the output signal only on a change in a presence before the switch.

7. (Original) The switch of claim 1 further comprising a comparator to compare the output signal to a threshold level for transmitting a first data bit only when the output signal exceeds the threshold level.

8. (Original) The switch of claim 1 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output signal.

9. (Original) The switch of claim 1 further comprising a delay counter synchronized with an AC period via an AC period zero cross detector, to generate a time delay after AC period zero crossing proportional to the output signal.

10. (Original) The switch of claim 1 wherein the control signal varies the power in the electrical circuit to provide a dimmer function.

11. (Original) The switch of claim 1 further comprising a power supply for the switch.

12. (Original) The switch of claim 11 wherein the power supply comprises a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged

13. (Original) The switch of claim 12 further comprising a regulator connected to the capacitor to regulate the line voltage.

14. (Original) The switch of claim 1 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

15. (Original) The switch of claim 14 wherein the cover plate has means to engage the air gap switch.

16. (Original) The switch of claim 14 wherein the cover plate is movable to toggle a lever disconnect switch, the cover plate having an arm for activating the lever.

17. (Original) The switch of claim 14 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

18. (Withdrawn) The switch of claim 1 further comprising means for lighting integrated with the switch.

19. (Withdrawn) A lighting system for use with an electrical component mounted in a wall box and having an electrical circuit passing therethrough, the lighting system comprising at least one light source, means to connect to a power supply integrated with the electrical circuit, a mounting assembly for supporting the light source and the power supply and a controller for controlling the light source whereby the light source is turned on and off, or a sequence of lighting a single light source or multiple light sources is initiated or an intensity of the light source is varied.

20. (Withdrawn) The lighting system of claim 19 wherein an intensity of the light source is varied in response to power flow through the electrical circuit.

21. (Withdrawn) The lighting system of claim 19 wherein the light source controller is programmed to generate a lighting sequence or an intensity to attract attention.

22. (Withdrawn) The switch of claim 1 further comprising a remotely located controller in communication with the switch for remotely activating or operating the switch.

23. (Withdrawn) The switch of claim 1 further comprising a separate input for control by a slave non-contact sensor unit.

24. (Withdrawn) The switch of claim 1 further comprising an interference detector to improve noise immunity.

25. (Withdrawn) The switch of claim 1 wherein the processing unit has a software algorithm to improve noise immunity.

26. (Currently Amended) A method for operating a device connected to an electrical circuit comprising:

providing an electrical box located having the electrical circuit passing therethrough;

providing a non-contact electrical switch in the electrical box and integrated with the electrical circuit, the switch having means for detecting a presence of an object adjacent to the switch and for generating a first data bit; a central processing unit connected to the presence detecting means and having means for receiving the data bit therefrom, and having signal processing means for calculating a power output in response to the first data bit and for generating a control signal for controlling power supplied to the electrical circuit; and,

using the control signal to vary the power in the electrical circuit, thereby providing a dimmer function.

27. (New) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising: means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power supplied to the electrical circuit; and,

a differentiator for receiving the output signal and for transmitting the output signal only on a change in a presence before the switch.

28. (New) The switch of claim 27 wherein the detecting means is a capacitive sensor.

29. (New) The switch of claim 27 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

30. (New) The switch of claim 27 further comprising an A/D converter to convert the output signal from the detecting means to a digital value.

31. (New) The switch of claim 27 further comprising a comparator to compare the output signal to a threshold level for transmitting a first data bit only when the output signal exceeds the threshold level.

32. (New) The switch of claim 27 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output signal.

33. (New) The switch of claim 27 further comprising a delay counter synchronized with an AC period via an AC period zero cross detector, to generate a time delay after AC period zero crossing proportional to the output signal.

34. (New) The switch of claim 27 wherein the control signal varies the power in the electrical circuit to provide a dimmer function.

35. (New) The switch of claim 27 further comprising a power supply for the switch.

36. (New) The switch of claim 35 wherein the power supply comprises a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged

37. (New) The switch of claim 36 further comprising a regulator connected to the capacitor to regulate the line voltage.

38. (New) The switch of claim 27 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

39. (New) The switch of claim 38 wherein the cover plate has means to engage the air gap switch.

40. (New) The switch of claim 38 wherein the cover plate is movable to toggle a lever

disconnect switch, the cover plate having an arm for activating the lever.

41. (New) The switch of claim 38 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

42. (New) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising:

means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power supplied to the electrical circuit; and,

a comparator to compare the output signal to a threshold level for transmitting a first data bit only when the output signal exceeds the threshold level.

43. (New) The switch of claim 42 wherein the detecting means is a capacitive sensor.

44. (New) The switch of claim 42 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

45. (New) The switch of claim 42 further comprising an A/D converter to convert the output signal from the detecting means to a digital value.

46. (New) The switch of claim 42 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output signal.

47. (New) The switch of claim 42 further comprising a delay counter synchronized with an AC period via an AC period zero cross detector, to generate a time delay after AC period zero

crossing proportional to the output signal.

48. (New) The switch of claim 42 wherein the control signal varies the power in the electrical circuit to provide a dimmer function.

49. (New) The switch of claim 42 further comprising a power supply for the switch.

50. (New) The switch of claim 49 wherein the power supply comprises a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged.

51. (New) The switch of claim 50 further comprising a regulator connected to the capacitor to regulate the line voltage.

52. (New) The switch of claim 42 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

53. (New) The switch of claim 52 wherein the cover plate has means to engage the air gap switch.

54. (New) The switch of claim 52 wherein the cover plate is movable to toggle a lever disconnect switch, the cover plate having an arm for activating the lever.

55. (New) The switch of claim 52 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

56. (New) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising:

means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for

receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power supplied to the electrical circuit; and,

a delay counter synchronized with an AC period via an AC period zero cross detector, to generate a time delay after AC period zero crossing proportional to the output signal.

57. (New) The switch of claim 56 wherein the detecting means is a capacitive sensor.

58. (New) The switch of claim 56 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

59. (New) The switch of claim 56 further comprising an A/D converter to convert the output signal from the detecting means to a digital value.

60. (New) The switch of claim 56 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output signal.

61. (New) The switch of claim 56 wherein the control signal varies the power in the electrical circuit to provide a dimmer function.

62. (New) The switch of claim 56 further comprising a power supply for the switch.

63. (New) The switch of claim 62 wherein the power supply comprises a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged.

64. (New) The switch of claim 63 further comprising a regulator connected to the capacitor to regulate the line voltage.

65. (New) The switch of claim 56 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the

air gap switch to halt power supply to the electrical circuit.

66. (New) The switch of claim 65 wherein the cover plate has means to engage the air gap switch.

67. (New) The switch of claim 65 wherein the cover plate is movable to toggle a lever disconnect switch, the cover plate having an arm for activating the lever.

68. (New) The switch of claim 65 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

69. (New) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising:

means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power supplied to the electrical circuit, the switch of claim 1 wherein the control signal varies the power in the electrical circuit to provide a dimmer function.

70. (New) The switch of claim 69 wherein the detecting means is a capacitive sensor.

71. (New) The switch of claim 69 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

72. (New) The switch of claim 69 further comprising an A/D converter to convert the output signal from the detecting means to a digital value.

73. (New) The switch of claim 69 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output

signal.

74. (New) The switch of claim 69 further comprising a power supply for the switch.

75. (New) The switch of claim 74 wherein the power supply comprises a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged

76. (New) The switch of claim 75 further comprising a regulator connected to the capacitor to regulate the line voltage.

77. (New) The switch of claim 69 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

78. (New) The switch of claim 77 wherein the cover plate has means to engage the air gap switch.

79. (New) The switch of claim 77 wherein the cover plate is movable to toggle a lever disconnect switch, the cover plate having an arm for activating the lever.

80. (New) The switch of claim 77 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

81. (New) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising:

means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power

supplied to the electrical; and

a power supply for the switch comprising a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged.

82. (New) The switch of claim 81 wherein the detecting means is a capacitive sensor.

83. (New) The switch of claim 81 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

84. (New) The switch of claim 81 further comprising an A/D converter to convert the output signal from the detecting means to a digital value.

85. (New) The switch of claim 81 further comprising a differentiator for receiving the output signal and for transmitting the output signal only on a change in a presence before the switch.

86. (New) The switch of claim 81 further comprising a comparator to compare the output signal to a threshold level for transmitting a first data bit only when the output signal exceeds the threshold level.

87. (New) The switch of claim 81 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output signal.

88. (New) The switch of claim 81 further comprising a delay counter synchronized with an AC period via an AC period zero cross detector, to generate a time delay after AC period zero crossing proportional to the output signal.

89. (New) The switch of claim 81 wherein the control signal varies the power in the electrical circuit to provide a dimmer function.

90. (New) The switch of claim 81 further comprising a regulator connected to the capacitor to regulate the line voltage.

91. (New) The switch of claim 81 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

92. (New) The switch of claim 91 wherein the cover plate has means to engage the air gap switch.

93. (New) The switch of claim 91 wherein the cover plate is movable to toggle a lever disconnect switch, the cover plate having an arm for activating the lever.

94. (New) The switch of claim 91 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

95. (New) A compact non-contact electrical switch for use in an electrical box mountable in a wall and having an electrical circuit passing therethrough comprising:

means for detecting a presence of an object adjacent to the switch and for generating an output signal;

a central processing unit connected to the presence detecting means and having means for receiving the output signal therefrom, and having signal processing means for calculating a power output in response to the output signal for generating a control signal for controlling power supplied to the electrical circuit; and,

an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

96. (New) The switch of claim 100 wherein the detecting means is a capacitive sensor.

97. (New) The switch of claim 101 further comprising a relay in the electrical circuit, wherein the control signal activates the relay for controlling power in the electrical circuit.

98. (New) The switch of claim 102 further comprising an A/D converter to convert the

99. (New) The switch of claim 103 wherein the signal processing means is a control logic converter where the amount of power to be supplied is determined as a function of the output signal.

100. (New) The switch of claim 95 further comprising a power supply for the switch.

101. (New) The switch of claim 95 wherein the power supply comprises a semiconductor element coupling a capacitor directly to a line voltage, such that when the line voltage is below a certain level, the capacitor is charged

102. (New) The switch of claim 101 further comprising a regulator connected to the capacitor to regulate the line voltage.

103. (New) The switch of claim 95 further comprising an air gap switch engaged with the non-contact electrical switch, a movable cover plate engaged to the air gap switch for activating the air gap switch to halt power supply to the electrical circuit.

104. (New) The switch of claim 103 wherein the cover plate has means to engage the air gap switch.

105. (New) The switch of claim 103 wherein the cover plate is movable to toggle a lever disconnect switch, the cover plate having an arm for activating the lever.

106. (New) The switch of claim 103 wherein the cover plate is movable for being pulled in or out to toggle a push button disconnect switch.

107. (New) A method for operating a device connected to an electrical circuit comprising: providing an electrical box located having the electrical circuit passing therethrough;

providing a non-contact electrical switch in the electrical box and integrated with the electrical circuit, the switch having means for detecting a presence of an object adjacent to the switch and for generating a first data bit; a central processing unit connected to the presence detecting means and having means for receiving the data bit therefrom, and having signal processing means for calculating a power output in response to the first data bit and for generating a control signal for controlling power supplied to the electrical circuit comparing the output signal to a threshold level for transmitting the first data bit only when the output signal exceeds the threshold level;

placing an object adjacent to the switch for controlling an amount of power supplied to the electrical circuit; and,

removing the object when a selected amount of power is supplied to the electrical circuit.

108. (New) The method of claim 107 wherein the means for detecting the presence of the object is a capacitive sensor.

109. (New) The method of claim 107 further comprising providing an AC period zero cross detector and a triac and generating the control signal as a delayed triac trigger pulse.

110. (New) The method of claim 107 further comprising receiving the output signal only on a change in the presence of the object adjacent to the switch.

111. (New) the method of claim 107 further comprising providing a differentiator for receiving the output signal and for transmitting the output signal only on a change in a presence before the switch.

112. (New) The method of claim 107 further comprising providing an air gap switch engaged with the non-contact electrical switch and a movable cover plate engaged to the air gap switch, and, activating the air gap switch to halt power supply to the electrical switch.